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10/588,480	04/09/2008	**Chul-Sik Yoon**	1403-21 PCT US	8209

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EXAMINER	
SHEN, QUN	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,480	YOON ET AL.	
	Examiner	Art Unit	
	QUN SHEN	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2006*.

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This communication is a Second Action non Final on the merits. Claims 1, 3, 5-13, 15-16 are amended. Claims 1-16, after amendment, are currently pending and have been considered below.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in PCT/KR2005/000313 on February 2, 2005. It is noted, however, that applicant has not filed a certified copy of the Korea 2004-0006574 and Korea 2004-0091824 applications as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: ***(See MPEP Ch. 2141)***

Determining the scope and contents of the prior art;
Ascertaining the differences between the prior art and the claims in issue;
Resolving the level of ordinary skill in the pertinent art; and
Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.tr

2. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2004/0142698 A1, Pietraski (hereinafter Pietraski), in view of US 2005/0289256 A1, Cudak et al. (hereinafter Cudak).

As to claim 1, Pietraski discloses a method for reporting channel quality information (CQI) for representing channel quality by a subscriber station in the mobile communication system (abstract), comprising:

a) receiving uplink radio resource allocation information for transmitting uplink data from a base station (Fig 3: 202, 204, par 0030);

c) generating the channel quality information by measuring a radio channel for communicating with the base station (Fig 3: 210, 212, par 0030), when the channel quality information indicator is included in the allocation information; and

d) including the channel quality information to the uplink data (Fig 3: 216) and transmitting the uplink data to the base station through a radio resource corresponding to the allocation information (Fig 3: 216, 218, pars 0030-0033).

Pietraski does not expressly disclose b) determining whether a channel quality information indicator is included in the allocation information, the channel quality information indicator representing a channel quality information report.

In the same field of endeavor, Cudak, teaches that the allocation information may include channel quality information indicator (Cudak: Fig 4: 403, transmit a channel quality request message to sub-set of remote unit (subscriber station), pars 0043-0044, 0047 – persistence, an indicator of # of time channel quality information would be sent

back to a base station, 0049 - resource allocation). Upon receiving an properly decoding the channel quality request message, the mobile station (remote unit) then measures and determines the channel quality and sends it to the base station as a report message (Cudak: Fig 5). Although Cudak does not explicitly indicate determining whether a channel quality information indicator is included in the allocation information, however, receiving and properly decoding the message is equivalent to identifying the representation of channel information report (therefore equivalent to determining the representation of channel information report), as channel quality request message includes resource allocation information (embedded in the channel information request message), as well as serves the purpose of representation of channel quality report. Cudak also teaches upon receiving and properly decoding the channel quality request message, mobile station would performs steps c) and d) (Cudak: Fig 5).

Therefore, consider both Pietraski and Cudak's teachings as a whole, it would have been obvious to one of skill in the art at the time of invention to modify Pietraski's method of channel quality information estimation and prediction by incorporating Cudak's teachings in generating providing channel quality request message to remote stations for more effective channel quality feedback with less resources.

As to claim 2, Pietraski ad modified discloses the method for reporting the channel quality information by the subscriber station of claim 1, wherein the channel quality information indicator is a piggyback indicator (Cudak: Figs 2, 6-7, channel quality

request as part of downlink data transmission).

As to claim 3, Pietraski ad modified discloses the method for reporting the channel quality information by the subscriber station of claim 1, wherein the uplink data includes data to be transmitted, and a header having information for the data and the subscriber station (Cudak: Figs 6, 8, the header of uplink channel as known in the art), and wherein the uplink data is transmitted by adding a subheader including the channel quality information to the header of the uplink data (Cudak: Figs 6, 8, channel quality report is transmitted along with (in front of) uplink data transmission, pars 0022, 0024-0026, 0028, 0037-0039).

As to claim 4, Pietraski as modified discloses the method for reporting the channel quality information by the subscriber station of claim 3, wherein the subheader including the channel quality information is added in advance to residual subheaders when a plurality of subheaders is added to the header of the uplink data (Cudak: pars 0022, 0024-0041, indicating channel quality report message may include additional information such as C/I, data rate, coding rate, modulation scheme, and number of transmission etc. Such information may all be considered arranged or considered as subheaders of the uplink channel in advance (prior to uplink transmission), along with other subheaders if exist).

As to claim 5, Pietraski as modified discloses the method for reporting the channel

quality information by the subscriber station of claim 1, wherein the allocation information includes the channel quality information indicator (see analysis of claim 1), and radio channel quality is measured to generate the channel quality information when the CQI indicator is set to a predetermined value for a request of the CQI, in step (c) (Pietraski: Fig 3: 210-212, measure and derive CQI, Cudak: Fig 2, PERSISTENCE value, Fig 5).

As to claim 6, Pietraski as modified discloses a method for reporting channel quality information for representing channel quality by a subscriber station in a mobile communication system (Fig 3), comprising:

a) allocating an uplink radio resource to the subscriber station having data to be transmitted to an uplink (Pietraski: Fig 1: 102, 106, Cudak: Fig 2, par 0049, resource allocation);

b) adding a channel quality information indicator for requesting the channel quality information to uplink radio resource allocation information (Cudak: Figs 2, 5, 8, channel quality request provides the indicator, pars 0043, 0047); and

c) transmitting the uplink radio resource allocation information including the channel quality information indicator to the subscriber station (Cudak: Figs 2, 5, 8), and requesting channel quality information (Pietraski: Fig 1: 112, 114, 116, 118, UE derives CQI, reports CQI to Node B used for next transmission, Cudak: Figs 2, 4, 8, par 0047).

As to claim 7, Pietraski as modified discloses the method for the reporting channel

quality information by the subscriber station of claim 6, wherein the channel quality information indicator is a piggyback indicator (see analysis of claim 2), and the channel quality information indicator is set to a predetermined value for a request of the channel quality information indicator in step (b) (Cudak: Figs 2, par 0047, also see analysis of claims 3, 6).

As to claim 8, Pietraski as modified discloses the method for reporting the channel quality information by the subscriber station of claim 6, further comprising:
receiving uplink data from the subscriber station through the uplink radio resource set according to the uplink radio resource allocation information (Cudak: Fig 4: 405, par 0061);
extracting the channel quality information from the uplink data (Cudak: Fig 4: 405-407); and
allocating downlink radio resource to the subscriber station based on the channel quality information (Cudak: Fig 4: 407-411, pars 0061-0062).

As to claim 9, claim 9 is a method claim that recites limitations for requesting and reporting channel quality information in a mobile communication system wherein a base station and a subscriber station are coupled by a mobile network, with the following limitations:
a) controlling the base station to add a channel quality information indicator for requesting a channel quality information report to an uplink radio resource for the

subscriber station having the data to be transmitted to the uplink, and transmitting uplink radio resource allocation information to the subscriber station;

b) controlling the subscriber station to measure the radio channel quality according to the channel quality information indicator, and to generate the channel quality information; and

c) controlling the subscriber station to include the channel quality information to the uplink data and transmit the uplink data to the base station through the radio resource according to the allocation information.

These limitations are equivalent or same with minor variance of the limitations recited in method claims 1 and 6. Therefore, claim 9 is rejected with the same reason set forth in claims 1 and 6 (see analysis and rejections above).

As to claim 10, Pietraski as modified discloses the method of claim 9, further comprising: controlling the base station to allocate a downlink radio resource to the subscriber station based on the channel quality information included in the uplink data provided by the subscriber station (Cudak: Figs 3, 4).

As to claim 11, Pietraski as modified discloses the method of claim 9, wherein the mobile communication system is a wireless portable internet system (Pietraski: pars 0003-0004, most of 3GPP technologies described can be a wireless portable internet services, therefore, the method applicable to wireless portable internet system).

As to claim 12, claim 12 recites a base station that encompasses and necessitates the method claim 6. Rejection of claim 6 is therefore incorporated herein (see analysis and rejection above).

As to claim 13, Pietraski as modified discloses the base station of claim 12, wherein the base station resource controller includes: an uplink resource allocator for allocating the uplink radio resource to the subscriber station to generate the uplink radio resource allocation information (Cudak: Fig 3: 301, par 0061); and a channel quality requestor for generating channel quality information indicator to the request channel information from the subscriber station (Cudak: Fig 2, Fig 4: 403, pars 0061-0062), wherein the uplink resource allocator transmits the uplink radio resource allocation information provided with the channel quality information indicator to the digital signal transmitter (Cudak: Fig 3: 101).

As to claim 14, Pietraski as modified discloses the base station of claim 13, further comprising a downlink resource allocator for allocating a downlink radio resource to the subscriber station based on the channel quality information included in uplink data transmitted from the subscriber station according to the channel quality information indicator (Cudak: Fig 3: 301, controller that allocates the resources, Fig 4: 407-411, par 0059, determine modulation scheme and coding rate of next downlink transmission based on the CQI report over uplink feedback).

As to claim 15, claim 15 recites a subscriber that encompasses and necessitates the method claim 1. Rejection of claim 1 is therefore incorporated herein (see analysis and rejection above).

As to claim 16, claim 16 is rejected with the same reason set forth in claim 3 (see analysis and rejection above).

Response to Argument

Applicant's arguments filed on May 28, 2010 have been fully considered but they are not persuasive.

Claim 1 recites "A method for reporting channel quality information (CQI) for representing channel quality by a subscriber station in the mobile communication system, comprising:

a) receiving uplink radio resource allocation information for transmitting uplink data from a base station;

b) determining whether a channel quality information indicator is included in the allocation information, the channel quality information indicator representing a channel quality information report;

c) generating the channel quality information by measuring a radio channel for communicating with the base station, when the channel quality information indicator is included in the allocation information; and

d) including the channel quality information to the uplink data and transmitting the uplink data to the base station through a radio resource corresponding to the allocation information."

Applicant essentially argues that Pietraski and Cudak do not teach or suggest the limitations recited in claim 1 "**b) determining whether a channel quality information indicator is included in the allocation information**".

Examiner would like to point out that Pietraski discloses a), c), and d) as discussed in the office action. Pietraski is silent about whether the whether the allocation information sent by the base station includes a channel quality information report or a channel quality information indicator. However, Cudak teaches a channel quality request message is sent to mobile station(s) by a base station (Fig 4). The message provides resource allocation information (see Fig 2, and par 0049) and also represents a report of channel quality information (e.g. requesting a report of channel quality information) (see pars 0043-0044). After receiving and properly decoding such message, the mobile station (remote unit) then measures and determines the channel quality and sends it to the base station as a report message (Fig 5). Although Cudak does not explicitly indicate determining whether a channel quality information indicator is included in the allocation information, however, receiving and properly decoding the message is equivalent to identifying the representation of channel information report (therefore equivalent to determining the representation of channel information report), as channel quality request message includes resource allocation information (embedded in the channel information request message), as well as serves the purpose of representation

of channel quality report. Furthermore, the claimed limitation determining **whether a channel quality information indicator is included in the allocation information** does not result in different outcome than Pietraski and Cudak's teachings. In order words, claim 1 does not specify if the channel quality information indicator is not included in the allocation information, how the mobile station would perform and only discloses steps c) and d) would be performed when the channel quality information indicator is included, which are also taught by Pietraski and Cudak (when the channel quality request message is detected, channel quality is measured and transmitted to the base station (steps c) and d)). Therefore, examiner believes Pietraski and Cudak still read on the claimed limitation.

Claims 6, 9, 12, and 15 recite similar features as claim 1 and therefore remain rejected with the same reason set forth in claim 1. Claims 2-5, 7-8, 13-14, and 16 depend on their rejected base claims, respectively. For rejection of these dependent claims, see the office action for detail.

Conclusion

Accordingly, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUN SHEN whose telephone number is (571)270-7927. The examiner can normally be reached on 9:30 am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinsong Hu can be reached on 571-272-3965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/QUN SHEN/
Examiner, Art Unit 2617

/Lewis G. West/
Supervisory Patent Examiner, Art Unit 2617